الاسم : _____

Quiz #2 <u>Modal Answer</u> TUE- 10/10/2017   رقم القيد : _____

- **Decode the following 32-bit patterns to MIPS instruction sets.**
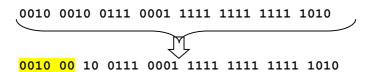 ```
  0x012A4027
  0x2271FFFA
  ```

## 0x012A4027

```
0000 0001 0010 1010 0100 0000 0010 0111
```



```
000000 01001 01010 01000 00000 100111
```

The most significant 6 bits (Left hand side) = 000000
→ the format of this instruction is R-Type.

op	rs	rt	rd	SA	Function
000000	01001	01010	01000	00000	100111
0	9	10	8	0	NOR

From table:
nor rd,rs,rt → nor $8,$9,$10 → nor $t0,$t1,$t2

0x2271FFFA

0010 0010 0111 0001 1111 1111 1111 1010

0010 00 10 0111 0001 1111 1111 1111 1010

The most significant 6 bits (Left hand side) ≠ 000000
→ the format of this instruction is either I-Type or
J-Type format, but from the table we cannot find this
OP code, so we couldn't decode.

$zero = $0,
$t0 = $8, $t1 = $9, $t2 = $10, $t3 = $11
$t4 = $12, $t5 = $13, $t6 = $14, $t7 = $15
$s0 = $16, $s1 = $17, $s2 = $18, $s3 = $19
$s4 = $20, $s5 = $21, $s6 = $22, $s7 = $23

Instruction		Function /opcode	Instruction		Function /opcode
ADD	rd, rs, rt	100000	SW	rt, immediate(rs)	101011
SUB	rd, rs, rt	100010	ANDI	rt, rs, immediate	001100
AND	rd, rs, rt	100100	ORI	rt, rs, immediate	001101
OR	rd, rs, rt	100101	BEQ	rs, rt, label	000100
NOR	rd, rs, rt	100111	BNE	rs, rt, label	000101
SLT	rd, rs, rt	101010	SLTI	rt, rs, immediate	001010
LW	rt, immediate(rs)	100011	J	label	000010

Hint *(if you open datasheet you will find 001000 is*
an operation code for addi instruction →
0x2271FFFA = addi $s1,$s3,-6)